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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,997	02/04/2004	Osamu Nozawa	0524-0139.01	4072

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 03/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/771,997	<b>Applicant(s)</b> NOZAWA ET AL.	
	<b>Examiner</b> Rodney G. McDonald	<b>Art Unit</b> 1753	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 28 and 29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Allowable Subject Matter***

The indicated allowability of claim 29 is withdrawn in view of the newly discovered reference(s) to Baldwin et al. Rejections based on the newly cited reference(s) follow.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 28 rejected under 35 U.S.C. 102(e) as being anticipated by Carcia et al. (US PG Pub 2002/01975090) (Here the April 19, 2001 date of the provisional is the effective date)

Regarding claim 28, Carcia et al. teach an apparatus for manufacturing a photomask blank. (See Abstract) In Figure 1 the apparatus has a substrate holder for rotation (i.e. shown by bold rotating arrow) for rotating the substrate around its center. A target 2 is placed in an opposed position with a center axis of the target deviating from the center axis of the substrate held by the substrate holder. The target is placed so that the opposed surfaces of the target and the substrate form a predetermined angle therebetween. (See Figure 1) Angles are adjusted between the substrate and

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the target to optimize film uniformity. (Page 2 paragraph 0012) The substrate can be 6x6 inch square quartz plate. (Page 4 paragraph 0045)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tu et al. (U.S. Pat. 5,714,285) in view of Namiki (U.S. Pat. 6,286,452) and Takeuchi (U.S. Pat. 4,096,026).

Tu et al. teach sputtering a layer for a photomask blank. In Fig. 5 the target is offset from the center of the substrate and the target is at an angle to the substrate. (See Fig. 4; Column 4 lines 4-14)

The difference between Tu et al. and the present claims is that Tu et al. does not teach holding a square shaped substrate and does not teach rotating the substrate.

Takeuchi discloses that when processing a photomask blank by sputtering, the photomask blank substrate can be square-shaped. (Example 5).

Namiki discloses a sputtering apparatus (column 3 lines 6-9) comprising a target 32 on a cathode that is opposed to a substrate 39 on a substrate holder 4 that can rotate about its center axis (Col. 3 lines 27-36). As can be seen from Figure 1, the center axis of the target is offset from the center axis of the substrate. (See Fig. 1)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Namiki by utilizing a square shaped substrate because it is desired to produce a photomask blank.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carcia et al. (2002/0197509) in view of Namiki (U.S. Pat 6,286,452).

Carcia et al. is discussed above and all is as applies above. (See Carcia et al. discussed above)

The difference between Carcia et al. and the present claims is where the substrate is rotating. (It is believed Carcia et al. shows this in Figure 1 with the arrow symbol but the mechanism is not necessarily shown but could be inherently present.)

Namiki discussed above teach a rotating substrate holder offset from the substrate. (See Namiki discussed above)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Carcia et al. by utilizing a rotation

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mechanism for rotating the substrate as taught by Namiki because it allows for rotating the substrate during deposition.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tu et al. in view of Namiki and Takeuchi and further in view of Baldwin et al. (U.S. Pat. 6,419,802).

Tu et al. in view of Namiki et and Takeuchi are discussed above.

The difference not yet discussed is the means for detecting a rotation position of the substrate and means for turning OFF an electric discharge to finish film formation when the substrate has completed an integral number of rotations from the position when turning ON the electric discharge to start film formation, so as to finish film formation at the position of the same rotation angle as the starting position of the film formation.

Baldwin et al. teach a position sensor for detecting a rotation position of the substrate. (See Abstract; Column 1 lines 32-33) Baldwin et al. teach a controller relating film thickness detected to position detected once the film thickness has been achieved the process is stopped. (Column 5 lines 63-64; Figs. 6, 7) Presumably the controller would stop the process once the thickness at a position on the substrate was achieved.

The motivation for providing a means for detecting a position and means for turning off and on the deposition is that it allows for controlling the thickness deposited. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a means for detecting a position and means for turning off and on the deposition as taught by Baldwin et al. because it allows for controlling the thickness deposited.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carcia et al. in view of Namiki and further in view of Baldwin et al. (U.S. Pat. 6,419,802).

Carcia et al. in view of Namiki is discussed above.

The difference not yet discussed is the means for detecting a rotation position of the substrate and means for turning OFF an electric discharge to finish film formation when the substrate has completed an integral number of rotations from the position when turning ON the electric discharge to start film formation, so as to finish film formation at the position of the same rotation angle as the starting position of the film formation.

Baldwin et al. teach a position sensor for detecting a rotation position of the substrate. (See Abstract; Column 1 lines 32-33) Baldwin et al. teach a controller relating film thickness detected to position detected once the film thickness has been achieved the process is stopped. (Column 5 lines 63-64; Figs. 6, 7) Presumably the controller would stop the process once the thickness at a position on the substrate was achieved.

The motivation for providing a means for detecting a position and means for turning off and on the deposition is that it allows for controlling the thickness deposited. (See Abstract)

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a means for detecting a position and means for turning off and on the deposition as taught by Baldwin et al. because it allows for controlling the thickness deposited.

### ***Response to Arguments***

Applicant's arguments filed December 27, 2005 have been fully considered but they are not persuasive.

In response to the argument that a predetermined angle between the substrate and the target is not discussed, it is argued that both Tu et al. and Carcia et al. teach a predetermined angle between the substrate and the target.

This action will be made Non-Final based on the newly cited references.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rodney G. McDonald  
Primary Examiner  
Art Unit 1753

RM  
February 22, 2006